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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,918	10/13/2004	Jeffrey A. Tarvin	101.0166	5917

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EXAMINER	
DITRANI, ANGELA M	
ART UNIT	PAPER NUMBER
3676	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,918	TARVIN ET AL.	
	Examiner	Art Unit	
	Angela M. DiTrani	3676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-94* is/are pending in the application.

4a) Of the above claim(s) *49-94* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,11-39 and 41-48* is/are rejected.

7)☒ Claim(s) *10 and 40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 October 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/24/05,06/10/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Invention I in the reply filed on 01/15/07 is acknowledged.

2. Claims 49-94 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 01/15/07.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 6-9, 12, 13, 15-34, 36-39, 41-45, 47, and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Tubel (US 6012015).

Tubel discloses a method for analyzing distributed temperature data from a well, comprising: obtaining temperature profile data along a portion of a wellbore; providing the temperature profile data to a processor; and automatically processing the temperature profile data to highlight valuable information to a user (see col. 8, lines 21-63; col. 13, line 65-col. 14, line 20).

With respect to depending claims 6-8, 12, 13, and 15-21, the reference teaches applying a model-fitting algorithm to the data (see col. 10, lines 22-54); selecting regions for fitting and fitting a model to data (see col. 10, lines 22-54); testing results for statistical significance (see col. 9, lines 56-65; col. 10, lines 22-54); a model-fitting algorithm (see col. 9, lines 56-65); trend removal and filtering (see col. 9, lines 56-65); utilizing a distributed temperature sensor (see col. 12, line 65 - col. 14, line 20); deploying an optical fiber in the wellbore (see col. 12, lines 32-38); a slickline distributed temperature sensing system (see col. 8, line 63-col. 9, line 5); utilizing a match filter (see col. 9, lines 56-65); the match filter used to detect particular temperature signals corresponding to a particular downhole event (see col. 8, line 63 -col. 9, line 5; col. 11, lines 42-49); the location of a gas lift valve (see col. 8, line 63 -col. 9, line 5); the hole in a tubing (see col. 8, line 63 -col. 9, line 5); the leak in a wellbore completion tool (see col. 5, line 52-col. 6, line 6; col. 8, line 63 – col. 9, line 5); and processing occurrence in real-time (see col. 8, lines 42-45); as claimed.

Tubel discloses a system to analyze distributed temperature data from a well, comprising: a distributed temperature sensor adapted to measure temperature profile data along a portion of a wellbore; a processor adapted to receive the temperature profile data; and wherein the processor automatically processes the temperature profile data to highlight valuable information to a user (see col. 8, lines 21-63; col. 13, line 65-col. 14, line 20).

With respect to depending claims 23-30, the reference teaches an optical fiber (see col. 12, lines 32-38); an opto-electronic unit to launch optical pulses downhole (see

col. 12, lines 26-38); the unit coupled to the processor by a communication link, a hardline link, a wireless link (see col. 12, lines 26-38); a portable computer (see col. 9, lines 37-50); the production tubing deployed in the wellbore with the optical fiber (see abstract and col. 12, lines 32-38); and the production tubing combined with a gas lift system (see abstract and col. 8, line 65-col. 9, line 2); as claimed.

Tubel discloses a method of detecting certain events within a well, comprising: obtaining data over a period of time along a portion of a wellbore; automatically processing the data to detect specific events related to heat energy in the well; and displaying results to a user (see col. 8, lines 21-63; col. 13, line 65-col. 14, line 20).

With respect to depending claims 32-34, 36-38, 41-45, 47, and 48, the reference teaches obtaining temperature data along the portion of the wellbore (see col. 8, lines 51-63); utilizing a distributed temperature sensor (see col. 13, line 65-col. 14, line 20); processing the data on a processor-based computer (see col. 8, lines 21-51); applying a model-fitting algorithm to the data; selecting regions for fitting and fitting a model to data, and, applying a model-fitting algorithm further comprises testing results for statistical significance (see col. 9, lines 56-65; col. 10, lines 22-54); a model-fitting algorithm (see col. 9, lines 56-65); applying a phenomenological model to the data (see col. 10, lines 21-54); detecting particular temperature signals corresponding to a particular downhole event, the location of a gas lift valve, the hole in a tubing, and, the leak in a wellbore completion tool (see col. 5, lines 52-col. 6, line 6; col. 8, line 52-col. 9, line 5); utilizing a match filter (see col. 11, lines 42-49); and automatically processing occurrence in real-time (see col. 8, lines 42-45); as claimed.

5. Claims 1-9, 11-17, 21-26, 28, 29, 31-39, 42, and 46-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Pruett (US 6807324).

Pruett discloses a method for analyzing distributed temperature data from a well, comprising: obtaining temperature profile data along a portion of a wellbore; providing the temperature profile data to a processor; and automatically processing the temperature profile data to highlight valuable information to a user (see col. 4, line 42-col. 5, line 18).

With respect to depending claims 2-9, 11-17, and 21, the reference teaches removing noise from the temperature profile data; removing low order spatial trends; utilizing a high-pass filter; utilizing a low-pass filter; applying a model-fitting algorithm to the data; selecting regions for fitting and fitting a model to data; testing results for statistical significance; constructing a match filter and using extrema of a convolution of the filter with data to select candidate depths; trend removal and filtering of the temperature profile data (see col. 5, line 19-col. 6, line 42); utilizing a distributed temperature sensor (se col. 4, line 42-col. 5, line 10); deploying an optical fiber in the wellbore (see col. 2, lines 60-62); a temporary distributed temperature sensor installation (see col. 1, lines 39-46); a slickline distributed temperature sensing system (see col. 6, lines 39-42); utilizing a match filter (see col. 5, line 19-col. 6, line 42); the match filter used to detect particular temperature signals corresponding to a particular downhole event (see col. 2, lines 1-7); and processing occurrence in real-time (see col. 5, lines 11-12); as claimed.

Pruett discloses a system to analyze distributed temperature data from a well,

comprising: a distributed temperature sensor adapted to measure temperature profile data along a portion of a wellbore; a processor adapted to receive the temperature profile data; and wherein the processor automatically processes the temperature profile data to highlight valuable information to a user (see col. 4, line 42-col. 5, line 18).

With respect to depending claims 23-26, 28, and 29, the reference teaches an optical fiber (see col. 2, lines 60-62); an opto-electronic unit to launch optical pulses downhole (see col. 1, lines 12-17); the unit coupled to the processor by a communication link, a hardline link (see col. 3, line 46-col. 4, line 24); a portable compute (see col. 5, lines 9-35); and the production tubing deployed in the wellbore with the optical fiber (see col. 2, lines 52-57); as claimed.

Pruett discloses a method of detecting certain events within a well, comprising: obtaining data over a period of time along a portion of a wellbore; automatically processing the data to detect specific events related to heat energy in the well; and displaying results to a user (see col. 3, lines 61-66; col. 4, line 42-col. 5, line 18).

With respect to depending claims 32-39, 42, and 46-48, the reference teaches the obtaining temperature data along the portion of the wellbore, utilizing a distributed temperature sensor (see col. 3, lines 61-66; col. 4, line 42-col. 5, line 18); processing the data on a processor-based computer (see col. 5, lines 9-35); processing backscattered light signals (see col. 3, lines 15-45); applying a model-fitting algorithm to the data, selecting regions for fitting and fitting a model to data, applying a model-fitting algorithm further comprises testing results for statistical significance, constructing a match filter and using extrema of a convolution of the filter with data to select candidate

depths (see col. 5, line 19-col. 6, line 42); detecting particular temperature signals corresponding to a particular downhole event (see col. 2, lines 1-7); displaying results in graphical form on a display monitor (see col. 5, lines 26-35); utilizing a match filter (see col. 5, line 19-col. 6, line 42); and automatically processing occurrence in real-time (see col. 5, lines 11-12); as claimed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tubel in view of Anderson (US 4,832,121).

Tubel discloses the method as stated above. However, the reference is silent

as to the length of time for which the temperature sensor is installed. Anderson teaches a method of monitoring the growth of a hydraulic fracture in an earth formation that can be conducted on a semi-permanent basis for the purpose of monitoring borehole temperatures over the time period that the temperature monitoring is carried out. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to specify a temporarily installation of the sensors of Tubel in order to control the well system for a specific period of time when it may not be desirable to permanently install the sensors.

9. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tubel.

Tubel discloses the method as stated above. However, the reference fails to explicitly teach displaying the results in graphical form. Tubel teaches in certain situations, an operator from the surface may initiate or stop fluid/gas flow from the geological formation into the borehole (see col. 8, lines 46-51). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the a display monitor was employed in the method of Tubel, in order to allow the operator to obtain information of the current wellbore situation.

Allowable Subject Matter

10. Claims 10 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4,832,121: The Anderson reference supports a 102(b) rejection of claims 1, 6, 7, 12, 14, 16, 17, 21, 22, 28, 31-34, 36, 42, 46, 47, and 48 and a 103(a) rejection of claims 2-5, 9, 11, and 39.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. DiTrani whose telephone number is (571) 272-2182. The examiner can normally be reached on M-F, 7:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Glessner can be reached on (571) 272-6843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD
02/28/07

BRIAN E. GLESSNER
SUPERVISORY PATENT EXAMINER